

**Amendment and Response**

Applicant: Ian P. Schaeffer et al.

Serial No.: 10/654,177

Filed: September 3, 2003

Docket No.: 10002500-2

Title: A METHOD OF FABRICATING A SUBSTANTIALLY ZERO SIGNAL DEGRADATION ELECTRICAL CONNECTION ON A PRINTED CIRCUIT BOARD

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**REMARKS**

The following remarks are made in response to the Office Action mailed September 15, 2005. In the Office Action, the Restriction Requirement mailed August 4, 2005 was withdrawn, which is noted with appreciation. In addition, claims 14-23 and 26-29 were rejected.

With this Response, claims 14-21 and 26-29 have been amended, and claims 30 and 31 are newly presented. Claims 14-23 and 26-31 remain pending in the application and are presented for consideration and allowance.

**Claim Rejections under 35 U.S.C. § 102**

Claims 14-23 and 26-29 were rejected under 35 U.S.C. § 102(b) as being anticipated by the Byle et al., U.S. Patent No. 6,320,139. However, these rejections to the claims should have been based on 35 U.S.C. § 102(e). The present application is a divisional of patent application 09/561,591, filed on May 1, 2000. The Byle et al. Patent issued on November 20, 2001 which is after the filing date of parent patent application 09/561,591. Since the Byle et al. Patent does not qualify as a prior art reference under 35 U.S.C. § 102(b), the following Remarks presume that claims 14-23 and 26-29 were rejected under 35 U.S.C. § 102(e).

The Byle et al. Patent teaches at column 2, lines 49-60 an electrical circuit board 10 that includes bridge circuits 14 coupled to conductive traces 12. Traces 12 provide interconnections between devices 16 and circuits 14.

The Byle et al. Patent teaches at column 3, lines 1-14 that bridge circuits 14 include trace elements 18 arranged such that heated liquefied solder 24 (*See Figure 3*) extends across a gap 20 between two trace elements 18. The Byle et al. Patent teaches at column 3, lines 5-10 that it is important that the trace elements 18 are spaced far enough apart such that a solder-dispensing apparatus 26 is capable of accurately dispensing soldering paste 24 in the correct positions (e.g., on elements 18 and between elements 18), yet near enough to each other that the solder 24 on one trace element 18 is capable of connecting to the other trace element 18 when heated. The Byle et al. teaches at column 4, lines 6-13 that enough soldering paste 24 must be deposited upon trace element 18 to bridge gap 20 between

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respective trace elements 18. In addition, the Byle et al. Patent teaches at column 4, lines 30-31 that it is desirable for liquid solder 24 to flow over gaps 20 in individual patterns 14.

With this response, independent claim 14 has been amended to provide a method of fabricating a substantially zero signal degradation electrical connection on a printed circuit board, the method including applying a solder paste on first and second conducting pads and on a first surface of a dielectric structure core, the solder paste covering less than an entirety of a surface area of the first surface between edges of the first and second conducting pads to form a substantially zero signal degradation electrical connection between the first and second conducting pads. Support for this language can be found throughout the Specification, and in particular, at page 9, line 26 through page 10, line 9, and in Figures 3 and 6.

It is respectfully submitted that the Byle et al. Patent does not teach or suggest solder paste covering less than an entirety of a surface area between edges of first and a second conducting pads to form a substantially zero degradation electrical connection between the first and second conducting pads, as required by amended independent claim 14.

Claims 15-23 and 26-29 further define patentably distinct amended independent claim 14. Therefore, these dependent claims are also believed to be allowable.

With this Response, claims 15-21 and 26-29 have been amended for reasons related to form and unrelated to patentability. It is respectfully requested that the amendments to claims 15-21 and 26-29 be entered, and these claims allowed.

Additionally, claim 18 has been amended to provide the method of claim 14 wherein applying the solder paste includes: applying the solder paste on the first surface of the dielectric structure core such that the solder paste covers less than 360 square mils. of the surface area of the first surface between the edges of the first and second conducting pads. Support for this language can be found throughout the Specification, and in particular, at page 8, line 32 through page 9, line 7. In particular, the Specification provides that conducting pads 18-28 are generally square having an edge length of 30 mils, and are separated by a pad-edge 30 to pad-edge 32 separation distance "D" (See Figure 1) of less than 12 mils. Therefore, a surface area of the first surface between edges of the first and second conducting

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pads is less than 360 square mils. (i.e., less than the 30 mils edge length multiplied by the 12 mils pad-edge to pad-edge separation distance D).

Therefore, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102 rejections to claims 14-23 and 26-29, and respectfully request allowance of claims 14-23 and 26-29.

**New Claims**

New claims 30 and 31 further define patentably distinct amended independent claim 14, and are therefore, believed to be allowable.

In addition, claim 30 provides the method of claim 14, wherein the first surface includes a first substantially square conducting pad having an edge and a second conducting pad having an edge separated from and adjacent to the edge of the first conducting pad. Support for this language can be found throughout the Specification, and in particular, at page 8, lines 32-33, and Figures 1 and 2. It is respectfully submitted that the Byle et al. Patent does not teach or suggest this additional limitation recited in claim 30.

Claim 31 provides the method of claim 14, wherein the first surface includes a first substantially square conducting pad having an edge and a second substantially square conducting pad having an edge separated from and adjacent to the edge of the first conducting pad. Support for this language can be found throughout the Specification, and in particular, at page 8, lines 32-33, and Figures 1 and 2. It is respectfully submitted the Byle et al. Patent does not teach or suggest this additional limitation recited in claim 31.

Therefore, Applicants respectfully request allowance of new claims 30 and 31.

**CONCLUSION**

In view of the above, Applicants respectfully submit that pending claims 14-23 and 26-31 recite patentable subject matter, are in form for allowance, and are not taught or suggested by the cited reference. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 14-23 and 26-31 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h),(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

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The Examiner is invited to telephone the Applicants' representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Patrick G. Billig at Telephone No. (612) 573-2003, Facsimile No. (612) 573-2005, or to David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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**CERTIFICATE UNDER 37 C.F.R. 1.8:**

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 15 day of December, 2005.

By: 

Name: Patrick G. Billig